

CASE PW-21855/P2/CGC 2002/CPA

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF

Group Art Unit: **1731**

RAYMOND SELTZER ET AL

Examiner: **Marc S. Alvo**

APPLICATION NO: **09/234,253**

FILED: JANUARY 20, 1999

FOR: INHIBITION OF PULP AND PAPER

YELLOWING USING HYDROXYLMINES

AND OTHER COADDITIVES

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**APPEAL BRIEF**

Sir:

This appeal is from the final rejection of **claims 1-11, 35-40 and 44** of the Office Action dated December 3, 2003.

The Notice of Appeal was mailed to the U.S. Patent and Trademark Office by first class mail with a Certificate of Mailing on March 3, 2004. The return receipt postcard accompanying the Notice of Appeal was date stamped in the PTO mail room March 8, 2004, making this Brief due on May 8, 2004. A petition for a two month extension of time is attached herewith, extending the period for timely response up to and including July 8, 2004. This Brief is timely filed.

07/08/2004 RMEBRAHT 00000012 031935 09234253  
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The Commissioner is hereby authorized to charge any necessary fee or credit any overpayment to Deposit Account No. 03-1935.

### **1. Real Party of Interest**

The real party of interest, by virtue of an assignment recorded in the U.S. Patent and Trademark Office on March 25, 1999, Reel/Frame 009838/0236, is:

Ciba Specialty Chemicals  
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### **2. Related Appeals and Interferences**

To the knowledge of the undersigned, there are no related interferences.

The divisional application of this application, U.S. app. No. 10/140,531, is on appeal.

A Notice of Appeal was mailed in related U.S. application No. 09/483,017 on April 13, 2004.

### **3. Status of the Claims**

The Request for Continued Examination under Rule 114 filed February 15, 2002 requested entry of an accompanying Amendment after Final Rejection, in which claim 45 was amended. Said amendment brings up to date the status of the claims.

Claims 1-40, 44 and 45 are pending.

Claims 12-34 stand withdrawn as being drawn to a non-elected invention.

Claims 1-11, 35-40, 44 and 45 are under consideration.

Claim 45 is allowable if rewritten in independent form.

Appealed claims 1-11, 35-40 and 44 are present in an attached appendix.

## **5. Summary of the Invention**

The present application relates to pulp or paper compositions that have reduced loss of brightness and enhanced resistance to yellowing by virtue of the compositions comprising certain dialkyl- or substituted dialkylhydroxylamine compounds or their corresponding salts. High yield wood pulps undergo rapid light-induced discoloration, which is ascribed to the substantial lignin content. The present invention addresses this problem.

The present invention is described for example in paragraphs 2-3 on page 1, and the second full paragraph of page 4 of the specification.

Commonly assigned application No. 09/481,665, filed Jan. 12, 2000, now U.S. Pat. No. 6,599,326, contains similar claims towards the stabilization of chemical paper. A terminal disclaimer over this patent is filed in the present application.

## **6. Issues**

One issue is presented for review:

Whether claims 1-11, 35-40 and 44 are obvious under 35 USC 103(a) over Seltzer, et al., U.S. Pat. No. 5,051,511 (Seltzer '511) in view of Rogers, et al., U.S. Pat. No. 5,459,222 (Rogers '222).

## **7. Grouping of the Claims**

Claims 1-11, 35-40 and 44 are argued as a group for the one issue and therefore stand or fall together.

## **8. Argument**

The present rejections are based on the disclosure in Seltzer '511 that optional stabilizers including N,N-diethylhydroxylamine may be added to for example polyurethane or polyester coating compositions, combined with the Rogers '222 teaching that polyurethane or polyester coating compositions including benzotriazole UVA's can be used to coat paper and textiles.

Appellants respectfully disagree and traverse the rejections.

Appellants have previously argued that polyurethane and polyester coatings are unknown as paper coatings and that therefore there is no motivation provided to combine the two references in order to solve the present problem of preventing loss of brightness and resistance to yellowing in pulp or paper. Known paper coatings use natural binders such as starch, soy protein or casein, or synthetic latices made from styrene/butadiene, vinyl acetate, vinyl-acrylic, acrylic or vinyl alcohol polymers.

Appellants submitted a Declaration under Rule 132 by Mr. David Vidal, an expert in paper coating employed at the Pulp and Paper Research Institute of Canada (PAPRICAN), along with the response filed Feb. 15, 2002. Mr. Vidal states that polyurethane and polyester coatings are unknown as paper coatings. He also cites three references; "The Coating Processes", 1993, pages 15-18; "Pigment Coating and Surface Sizing of Paper", 2000, page 799; and "Handbook for Pulp and Paper Technologists", Second Ed., 1997, page 288 as evidence to support his statement. These references were submitted along with the Vidal Declaration.

Appellants submit that the Vidal Declaration and supporting documents have not been properly considered. Appellants submit that the arguments of record and the Vidal Declaration, each separately, are satisfactory towards overcoming the present rejections.

The Examiner countered by pointing out that in col. 8, lines 35-38 of Rodgers '222, the statement "For textiles a padding operation can be used and for paper, addition to wet pulp; but here also, surface application by a spraying or a coating process is preferable. It is possible to mix the inventive UV-absorbing polymers with other finishing agents for paper,...". Appellants point out that this statement of Rodgers is moot as a paper expert in 2002 stated that polyurethane and polyester coatings are unknown as paper coatings. Two of the supporting documents to the Declaration also post-date the 1995 Rodgers reference. Therefore, the Vidal Declaration and attached documents bring up to date the state of the art for paper, that is that polyester and polyurethane coatings are unknown for paper.

Since polyurethane or polyester coatings are unknown as paper coatings, and were unknown at the time of filing of the present application, there is nothing today or at the time of filing to motivate one skilled in the art to combine the Seltzer '511 and Rogers '222 references regarding paper coatings. As the Examiner states, the references are combined due to their overlap regarding polyurethane and polyester coatings.

Further, Seltzer '511 is aimed at thermoset resins such as the coating resins exemplified in working Examples 12-14 therein (automotive coatings). There is no mention therein towards the coating of paper.

In light of the above, Appellants submit that those skilled in the art would not combine the cited references in order to solve the problem of stabilizing paper.

Further, even with the two cited references in hand, one skilled in the art could not arrive at the present invention. The stabilizers that are the focus of the cited references are hindered amines and ultraviolet light absorbers (UVA's). The stabilizers of the present invention are hydroxylamine and hydroxylamine salts. Seltzer '511 only very generically mentions the possible co-use of hydroxylamine stabilizers among a long list of other potential stabilizers. Seltzer '511 also only generically mentions polyesters and polyurethanes among a whole host of polymer substrates.

Very judicious picking and choosing and/or an inordinate amount of testing would be required in order to arrive at the present invention from the combined disclosures of the cited references, that is a stabilized composition comprising pulp or paper and an effective amount of certain

hydroxylamines or their salts. An assertion that the present invention is obvious from the combination of cited references is hindsight analysis.

Further, the Rogers '222 reference does not teach the use of Cibafast® W, the sodium salt of 3-(2H-benzotriazol-2-yl)-4-hydroxy-5-sec-butylbenzene sulfonic acid, but rather teaches that it is an ineffective stabilizer relative to the inventive stabilizers therein. In Example 21 of Rogers '222, cited by the Examiner, Cibafast® W is shown to be ineffective relative to a polymer-bound benzotriazole UVA. The Rogers '222 reference then teaches away from the present invention of a stabilized composition that further comprises Cibafast® W.

In light of the above discussion, Appellants assert that one skilled in the art would not combine the cited references in order to solve the problem of formulating paper or pulp compositions stabilized against the loss of brightness and having resistance to yellowing and that even with the combination of cited references in hand one skilled in the art would not be able to arrive at the present invention.

Further, the skilled artisan could not choose specific stabilizers, a specific class of stabilizers, or a combination of specific stabilizers that are only very generically disclosed in the cited references with any expectation of success towards preventing brightness loss and yellowing in paper or pulp.

In view of the above discussion and the Vidal Declaration, Appellants aver that the present rejections of claims 1-11, 35-40 and 44 under 35 USC 103(a) are addressed and are successfully rebutted.

Appellants respectfully submit that the rejections of the present claims are overcome.

Appellants aver that these rejections are in error as outlined above and respectfully request that they be reversed.

Respectfully submitted,



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Attachments: Appendix with claims on appeal  
Transmittal Letter  
Petition for a two month extension of time

**9. Appendix Claims on Appeal: 1-11, 35-40 and 44**

**1. (original)** A composition having reduced loss of brightness and enhanced resistance to yellowing which comprises

(a) a pulp or paper, and

(b) an effective stabilizing amount of an N,N-dialkylhydroxylamine, an ester, amide or thio substituted N,N-dialkylhydroxylamine or N,N-dibenzylhydroxylamine of formula I, II or III



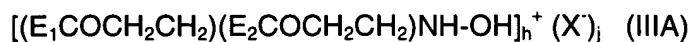
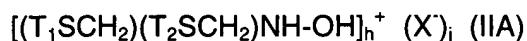
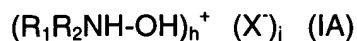
where

$R_1$  and  $R_2$  are independently alkyl of 1 to 18 carbon atoms, alkyl of 1 to 18 carbon atoms substituted by a hydroxyl group; or benzyl;

$T_1$  and  $T_2$  are independently alkyl of 1 to 4 carbon atoms, phenyl, 3,5-di-tert-butyl-4-hydroxy-phenyl, benzyl or  $-CH_2COOH$ ;

$E_1$  and  $E_2$  are independently  $-OE_3$ ,  $-NHE_3$  or  $-NE_3E_4$  where  $E_3$  and  $E_4$  are independently hydrogen, alkyl of 1 to 4 carbon atoms or said alkyl substituted by one hydroxyl group; or

of an acid salt of formula IA, IIA or IIIA



where



$R_1$ ,  $R_2$ ,  $T_1$ ,  $T_2$ ,  $E_1$  and  $E_2$  are as defined above,

X is an inorganic or organic anion, and

the total charge of cations h is equal to the total charge of anions j.

**2. (original)** A composition according to claim 1 wherein component (a) is a pulp or paper which still contains lignin.

**3. (original)** A composition according to claim 1 where in the formula IA, IIA or IIIA, X is phosphate, phosphonate, carbonate, bicarbonate, nitrate, chloride, bromide, bisulfite, sulfite, bisulfate, sulfate, borate, formate, acetate, benzoate, citrate, oxalate, tartrate, acrylate, polyacrylate, fumarate, maleate, itaconate, glycolate, gluconate, malate, mandelate, tiglate, ascorbate, polymethacrylate, a carboxylate of nitrilotriacetic acid, hydroxyethylethylenediaminetriacetic acid, ethylenediaminetetraacetic acid or of diethylenetriaminepentaacetic acid, a diethylenediaminetetraacetic acid or of diethylenetriaminepentaacetic acid, an alkylsulfonate or an arylsulfonate.

**4. (original)** A composition according to claim 1 wherein the hydroxylamine of formula I, II or III is N,N-dimethylhydroxylamine, N,N-diethylhydroxylamine, N,N-bis(2-hydroxypropyl)hydroxylamine, N,N-bis(3-hydroxypropyl)hydroxylamine, N,N-dioctadecylhydroxylamine, the N,N-dialkylhydroxylamine product made by the direct oxidation of N,N-di(hydrogenated tallow)amine, N,N-dibenzylhydroxylamine, N,N-bis(2-carboxyethyl)hydroxylamine or N,N-bis(benzylthiomethyl)hydroxylamine.

**5. (original)** A composition according to claim 4 wherein the hydroxylamine is N,N-diethylhydroxylamine, N,N-bis(2-hydroxypropyl)hydroxylamine, N,N-bis(3-hydroxypropyl)hydroxylamine or N,N-dibenzylhydroxylamine.

**6. (original)** A composition according to claim 1 wherein the hydroxylamine is N,N-diethylhydroxylamine or its citrate salt.

**7. (original)** A composition according to claim 1 which additionally includes an effective stabilizing amount of at least one stabilizer selected from the group consisting of the UV absorbers, the polymeric inhibitors, the sulfur containing inhibitors, the phosphorus containing compounds, the nitrones, the benzofuran-2-ones, fluorescent whitening agents, hindered amine hydroxylamines and salts thereof, hindered amine nitroxides and salts thereof, hindered amines and salts thereof and metal chelating agents.

**8. (original)** A composition according to claim 7 wherein the additional stabilizer is a UV absorber.

**9. (original)** A composition according to claim 8 wherein the UV absorber is selected from group consisting of the benzotriazoles, the s-triazines, the benzophenones, the  $\alpha$ -cyanoacrylates, the oxanilides, the benzoxazinones, the benzoates and the  $\alpha$ -alkyl cinnamates.

**10. (original)** A composition according to claim 8 wherein the UV absorber is a benzotriazole, an s-triazine or a benzophenone.

**11. (original)** A composition according to claim 10 wherein the UV absorber is 3-(2H-benzotriazol-2-yl)-4-hydroxy-5-sec-butylbenzene sulfonic acid, sodium salt (CIBAFast® W).

**12. (withdrawn)** A composition according to claim 7 wherein the additional stabilizer is a polymeric inhibitor.

**13. (withdrawn)** A composition according to claim **12** wherein the polymeric inhibitor is poly(ethylene glycol), poly(propylene glycol), poly(butylene glycol) or poly(vinyl pyrrolidone).

**14. (withdrawn)** A composition according to claim **7** wherein the additional stabilizer is a sulfur containing inhibitor.

**15. (withdrawn)** A composition according to claim **14** wherein the sulfur containing inhibitor is polyethylene glycol dithiolacetate, polypropylene glycol dithiolacetate, polybutylene glycol dithioacetate, 1-thioglycerol, 2-mercaptoethyl ether, 2,2'-thiodiethanol, 2,2'-dithiodiethanol, 2,2'-oxydiethanethiol, ethylene glycol bithioglycolate, 3-mercapto-1,2-propanediol, 2-(2-methoxyethoxy)-ethanethiol, glycol dimercaptoacetate, 3,3'-dithiopropionic acid, polyethylene glycol dithiol, polypropylene glycol dithiol, polybutylene glycol dithiol or ethylene glycol bis(mercaptoacetate).

**16. (withdrawn)** A composition according to claim **7** wherein the additional stabilizer is a phosphorus containing compound.

**17. (withdrawn)** A composition according to claim **16** wherein the phosphorus containing compound is tris(2,4-di-tert-butylphenyl) phosphite, 2,2',2''-nitrido[triethyl-tris(3,3',5,5'-tetra-tert-butyl-1,1'-biphenyl-2,2'-diyl) phosphite], tris(2,4-di-tert-butyl-6-ethylphenyl) phosphite, sodium hydroxymethyl phosphinate, tetrakis(2,4-di-butylphenyl) 4,4'-biphenylenediphosphonite, tris(nonylphenyl) phosphite, bis(2,4-di-tert-butylphenyl) pentaerythrityl diphosphite, 2,2'-ethylidenebis(2,4-di-tert-butylphenyl) fluorophosphite or 2-butyl-2-ethylpropan-1,3-diyl 2,4,6-tri-tert-butylphenyl phosphite.

**18. (withdrawn)** A composition according to claim **7** wherein the additional stabilizer is a mixture of a UV absorber and polymeric inhibitor.

**19. (withdrawn)** A composition according to claim **7** wherein the additional stabilizer is a mixture of a UV absorber and a sulfur containing compound.

**20. (withdrawn)** A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber and a phosphorus containing compound.

**21. (withdrawn)** A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber and a metal chelating agent.

**22. (withdrawn)** A composition according to claim 7 wherein the additional stabilizer is a mixture of a polymeric inhibitor and a sulfur containing compound.

**23. (withdrawn)** A composition according to claim 7 wherein the additional stabilizer is a mixture of a polymeric inhibitor and a phosphorus containing compound.

**24. (withdrawn)** A composition according to claim 7 wherein the additional stabilizer is a mixture of a sulfur containing compound and a phosphorus containing compound.

**25. (withdrawn)** A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber, a polymeric inhibitor and a sulfur containing compound.

**26. (withdrawn)** A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber, a polymeric inhibitor and a phosphorus containing compound.

**27. (withdrawn)** A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber, a polymeric inhibitor and a metal chelating agent.

**28. (withdrawn)** A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber, a polymeric inhibitor, a sulfur containing compound and a phosphorus containing compound.

**29. (withdrawn)** A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber and a hindered amine nitroxide.

**30. (withdrawn)** A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber and a hindered amine hydroxylamine.

**31. (withdrawn)** A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber and a hindered amine hydroxylamine salt.

**32. (withdrawn)** A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber and a hindered amine.

**33. (withdrawn)** A composition according to claim 7 wherein the additional stabilizer is a fluorescent whitening agent.

**34. (withdrawn)** A composition according to claim 33 wherein the fluorescent whitening agent is 2,2'-[(1,1'-diphenyl)-4,4'-diyl-1,2-ethenediyl]bis-benzenesulfonic, disodium salt {or bis[4,4'-(2-stilbenesulfonic acid)]}, disodium salt} (TINOPAL® SK).

**35. (original)** A composition according to claim 1 wherein the effective stabilizing amount of the hydroxylamine or hydroxylamine salt is 0.001 to 5% by weight based on the pulp or paper.

**36. (original)** A composition according to claim 1 wherein the effective stabilizing amount of the hydroxylamine is 0.005 to 4% based on the pulp or paper.

**37. (original)** A composition according to claim 1 wherein the effective stabilizing amount of the hydroxylamine is 0.01 to 4% based on the pulp or paper.

**38. (original)** A composition according to claim 7 wherein the effective stabilizing amount of a coadditive is 0.001 to 5% by weight based on the pulp or paper.

**39. (original)** A composition according to claim 7 wherein the effective stabilizing amount of a coadditive is 0.005 to 3% by weight based on the pulp or paper.

**40. (original)** A composition according to claim 7 wherein the effective stabilizing amount of a coadditive is 0.01 to 2% based on the pulp or paper.

**41-43. (canceled)**

**44. (previously presented)** A composition having reduced loss of brightness and enhanced resistance to yellowing which comprises

(a) a pulp or paper, and

(b) an effective stabilizing amount of tris(N,N-diethylhydroxylammonium) citrate.

**45. (previously presented)** A composition according to claim 44 which additionally includes an effective stabilizing amount of 3-(2H-benzotriazol-2-yl)-4-hydroxy-5-sec-butylbenzene sulfonic acid, sodium salt.